

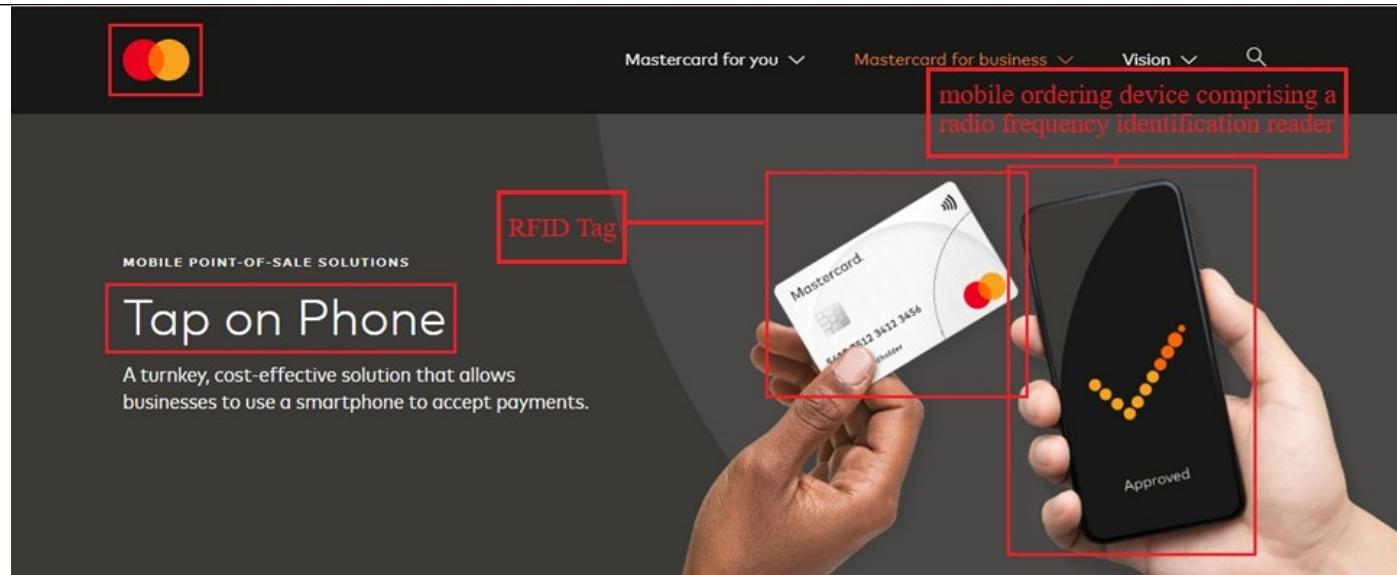
Exhibit 3

Charted claims

Non-Method claim: 1

US8788360B2	Mastercard's Tap on Phone ("The Accused Product")
<p>1. A system for processing a wireless request over a network based on a human-perceptible advertisement for advertising to consumers a product or service offered by a vendor, the advertisement attached with at least one radio frequency identification (RFID) tag, the at least one RFID tag being configured to transmit a wireless identification transmission signal</p>	<p>The accused product discloses a system (e.g., contactless payments) for processing a wireless request (e.g., payment request) over a network based on a human-perceptible advertisement (e.g., informing to accept payments from any contactless card or mobile wallet from their NFC-enabled device) for advertising to consumers a product or service offered by a vendor (e.g., SMEs/micromerchants and mobile venues, ticket agents, etc.), the advertisement (e.g., informing to accept payments from any contactless card or mobile wallet from their NFC-enabled device) attached with at least one radio frequency identification (RFID) tag (e.g., NFC tag on a contactless card), the at least one RFID tag (e.g., NFC tag on a contactless card) being configured to transmit a wireless identification transmission signal (e.g., tag responds with the requested information corresponding to a prompt for inputting a PIN) representing information pertaining to the product or service offered by a vendor (e.g., SMEs/micromerchants and mobile venues, ticket agents, etc.).</p> <p>As shown below, Mastercard Tap on Phone is a contactless payment system using Near Field Communication (NFC) technology wherein a user can Pay with your NFC-enabled contactless card to a phone which can accept payments. The phone equipped with Tap on Phone software is a platform for displaying a human-perceptible advertisement for advertising a product or service offered by a vendor. The RFID tag (e.g., contactless card) transmits a wireless identification transmission signal (e.g., tag responds with the requested information) in response to the product or service offered by a vendor (e.g., SMEs/micromerchants and mobile venues, ticket agents, etc.).</p>

representing information pertaining to the product or service offered by a vendor comprising:



<https://www.mastercard.com/global/en/business/overview/start-accepting/mobile-pos/tap-on-phone.html>

It's like having exact change wherever you go, but even faster and more convenient than cash. Use anywhere you see the Contactless symbol at checkout.



<https://www.mastercard.us/en-us/personal/ways-to-pay/contactless.html>

How it works

Tap on Phone allows businesses to accept payments from any contactless card or mobile wallet right from their NFC-enabled device. With no extra hardware required, businesses can take advantage of this on-the-go solution to enable quick and convenient payment options.

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html>

6Lo Working Group
Internet-Draft
Intended status: Standards Track
Expires: 25 April 2023

Y. Choi, Ed.
ETRI
Y-G. Hong
Daejeon Univ.
J-S. Youn
Dongeui Univ.
D-K. Kim
KNU
22 October 2022

Transmission of IPv6 Packets over Near Field Communication
draft-ietf-6lo-nfc-18

Abstract

Near Field Communication (NFC) is a set of standards for smartphones and portable devices to establish radio communication with each other by touching them together or bringing them into proximity, usually no more than 10 cm apart. NFC standards cover communications protocols and data exchange formats, and are based on existing radio-frequency identification (RFID) standards including ISO/IEC 14443 and FeliCa. The standards include ISO/IEC 18092 and those defined by the NFC Forum. The NFC technology has been widely implemented and available in mobile phones, laptop computers, and many other devices. This document describes how IPv6 is transmitted over NFC using 6LoWPAN techniques.

<https://www.ietf.org/archive/id/draft-ietf-6lo-nfc-18.txt>

Near Field Communication Technology Standards

When developing near field communication devices and new technology, NFC standards must be met. Standards exist to ensure all forms of near field communication technology can interact with other NFC compatible devices and will work with newer devices in the future. Two major specifications exist for NFC technology: ISO/IEC 14443 and ISO/IEC 18000-3. The first defines the ID cards used to store information, such as that found in NFC tags. The latter specifies the RFID communication used by NFC devices.

ISO/IEC 18000-3 is an international standard for all devices communicating wirelessly at the 13.56MHz frequency using Type A or Type B cards, as near field communication does. The devices must be within 4cm of each other before they can transmit information. The standards explain how a device and the NFC tag it is reading should communicate with one another. The device is known as the interrogating device while the NFC tag is simply referred to as the tag.

<http://nearfieldcommunication.org/technology.html>

The two devices create a high frequency magnetic field between the loosely coupled coils in both the interrogating device and the NFC tag. Once this field is established, a connection is formed and information can be passed between the interrogator and the tag. The interrogator sends the first message to the tag to find out what type of communication the tag uses, such as Type A or Type B. When the tag responds, the interrogator sends its first commands in the appropriate specification.

The tag receives the instruction and checks if it is valid. If not, nothing occurs. If it is a valid request, the tag then responds with the requested information. For sensitive transactions such as credit card payments, a secure communication channel is first established and all information sent is encrypted.

NFC tags function at half duplex while the interrogator functions at full duplex. Half duplex refers to a device that can only send or receive, but not both at once. Full duplex can do both simultaneously. A NFC tag can only receive or send a signal, while the interrogating device can receive a signal at the same time it sends a command. Commands are transmitted from the interrogator using PJM (phase jitter modulation) to modify the surrounding field and send out a signal. The tag answers using inductive coupling by sending a charge through the coils in it. Meeting these specifications ensures all NFC devices and tags can communicate effectively with one another.

<http://nearfieldcommunication.org/technology.html>

ISO/IEC 18000-63:2013 specifies the physical and logical requirements for a passive-backscatter, Interrogator-Talks-First (ITF) systems. The system comprises Interrogators, also known as readers, and tags, also known as labels. An Interrogator receives information from a tag by transmitting a continuous-wave (CW) RF signal to the tag; the tag responds by modulating the reflection coefficient of its antenna, thereby backscattering an information signal to the Interrogator. The system is ITF, meaning that a tag modulates its antenna reflection coefficient with an information signal only after being directed to do so by an Interrogator.

ISO/IEC 18000-63:2013 contains Type C.

Type C uses PIE in the forward link and a random slotted collision-arbitration algorithm.

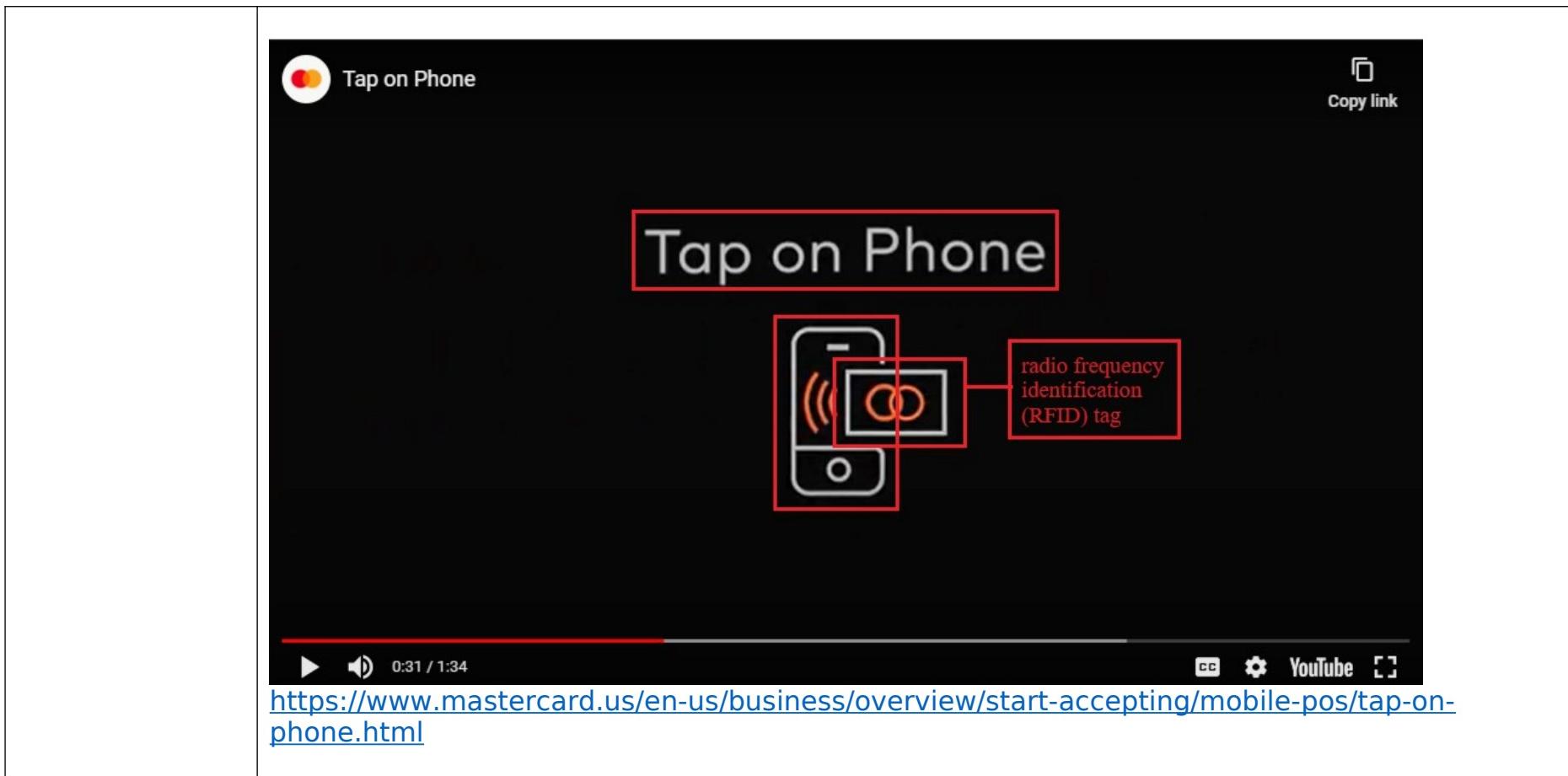
ISO/IEC 18000-63:2013 specifies

<https://www.iso.org/standard/59643.html>

Transit

Help consumers get to their next destination with a simple tap to pay with a ticket agent.

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html>



Cash-only merchants

SMEs/micromerchants and mobile venues
can use Tap on Phone to address their need
for flexible, low-cost, mobile and scalable
card acceptance solutions.

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html>

	 <p>https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/iphone.html</p>
mobile ordering device of a human consumer who perceives the human-perceptible advertisement, the mobile ordering device comprising a	The accused product discloses mobile ordering device (e.g., NFC-enabled device) of a human consumer who perceives the human-perceptible advertisement (e.g., accept payments from any contactless card or mobile wallet from their NFC-enabled device), the mobile ordering device (e.g., NFC-enabled device) comprising a radio frequency identification reader (e.g., reader of the e.g., NFC-enabled device) configured to transmit a signal (e.g., transmitting a continuous-wave (CW) RF signal to transmit a payment request to the contactless card) to the at least one RFID tag (e.g., NFC tag on a contactless card) attached with the advertisement (e.g., accept payments from any contactless card or mobile wallet from their NFC-enabled device) and to receive in response (e.g., responds) from the at least one RFID tag (e.g., NFC tag on a contactless card) the wireless identification transmission signal (e.g., tag responds with the requested information corresponding to a prompt for inputting a PIN)) corresponding

radio frequency identification reader configured to transmit a signal to the at least one RFID tag attached with the advertisement and to receive in response from the at least one RFID tag the wireless identification transmission signal corresponding to the advertisement and representing information pertaining to the product or service offered by the vendor, the mobile ordering device further configured to	<p>to the advertisement (e.g., accept payments from any contactless card or mobile wallet from their NFC-enabled device) and representing information pertaining to the product or service offered by the vendor (e.g., SMEs/micromerchants and mobile venues, ticket agents, etc.), the mobile ordering device (e.g., NFC-enabled device) further configured to accept input (e.g., online PIN using the merchant PIN pad or Signature i.e. the mobile ordering device acts as a POS device) from a consumer, generate an electronic request (e.g., payment request) with the received information from the wireless identification transmission signal (e.g., tag responds with the requested information corresponding to a prompt for inputting a PIN)) and communicate the request (e.g., payment request) to and receive a response (e.g., acknowledgement in the form of Done or a checkmark on the display screen) from a commerce data system (e.g., payments from any contactless card or mobile wallet) across a network.</p> <p>As shown below, Mastercard Tap on Phone is a contactless payment system using Near Field Communication (NFC) technology wherein a user can Pay with your contactless card to a phone equipped with tap on phone software. Initial connection setup is established through a radio frequency network wherein tag receives the instruction from the NFC Interrogator/reader or radio frequency identification reader (e.g., NFC antenna area) during the scanning process of the contactless card (equipped with an NFC Tag) and checks if it is valid. If it is a valid request, the tag then responds with the requested information. This information includes a prompt to enter the pin for continuing the payment. After the input of the pin, the device sends a request to the commerce data system to process the payment. Once the payment is processed, the commerce data system responds with an approved message and an option to send receipt for the transaction as the response to the request.</p>
---	--

accept input from a consumer, generate an electronic request with the received information from the wireless identification transmission signal and communicate the request to and receive a response from a commerce data system across a network;

Transit

Help consumers get to their next destination with a simple tap to pay with a ticket agent.

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html>

Cash-only merchants

SMEs/micromerchants and mobile venues can use Tap on Phone to address their need for flexible, low-cost, mobile and scalable card acceptance solutions.

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html>



Tap to Pay on iPhone

Accept contactless payments with only an iPhone.

Watch video

the mobile ordering device comprising a radio frequency identification reader configured to transmit a signal

RFID tag attached with the advertisement

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/iphone.html>

Near Field Communication Technology Standards

When developing near field communication devices and new technology, NFC standards must be met. Standards exist to ensure all forms of near field communication technology can interact with other NFC compatible devices and will work with newer devices in the future. Two major specifications exist for NFC technology: ISO/IEC 14443 and ISO/IEC 18000-3. The first defines the ID cards used to store information, such as that found in NFC tags. The latter specifies the RFID communication used by NFC devices.

ISO/IEC 18000-3 is an international standard for all devices communicating wirelessly at the 13.56MHz frequency using Type A or Type B cards, as near field communication does. The devices must be within 4cm of each other before they can transmit information. The standards explain how a device and the NFC tag it is reading should communicate with one another. The device is known as the interrogating device while the NFC tag is simply referred to as the tag.

<http://nearfieldcommunication.org/technology.html>

The two devices create a high frequency magnetic field between the loosely coupled coils in both the interrogating device and the NFC tag. Once this field is established, a connection is formed and information can be passed between the interrogator and the tag. The interrogator sends the first message to the tag to find out what type of communication the tag uses, such as Type A or Type B. When the tag responds, the interrogator sends its first commands in the appropriate specification.

The tag receives the instruction and checks if it is valid. If not, nothing occurs. If it is a valid request, the tag then responds with the requested information. For sensitive transactions such as credit card payments, a secure communication channel is first established and all information sent is encrypted.

NFC tags function at half duplex while the interrogator functions at full duplex. Half duplex refers to a device that can only send or receive, but not both at once. Full duplex can do both simultaneously. A NFC tag can only receive or send a signal, while the interrogating device can receive a signal at the same time it sends a command. Commands are transmitted from the interrogator using PJM (phase jitter modulation) to modify the surrounding field and send out a signal. The tag answers using inductive coupling by sending a charge through the coils in it. Meeting these specifications ensures all NFC devices and tags can communicate effectively with one another.

a radio frequency identification reader configured to transmit a signal to the at least one RFID tag

<http://nearfieldcommunication.org/technology.html>

ISO/IEC 18000-63:2013 specifies the physical and logical requirements for a passive-backscatter, Interrogator-Talks-First (ITF) systems. The system comprises Interrogators, also known as readers, and tags, also known as labels. An Interrogator receives information from a tag by transmitting a continuous-wave (CW) RF signal to the tag; the tag responds by modulating the reflection coefficient of its antenna, thereby backscattering an information signal to the Interrogator. The system is ITF, meaning that a tag modulates its antenna reflection coefficient with an information signal only after being directed to do so by an Interrogator.

ISO/IEC 18000-63:2013 contains Type C.

Type C uses PIE in the forward link and a random slotted collision-arbitration algorithm.

ISO/IEC 18000-63:2013 specifies
<https://www.iso.org/standard/59643.html>

CARDHOLDER VERIFICATION

Traditional payments normally require some Cardholder Verification Method (CVM) such as PIN or signature. For low-value contactless payments below the "Contactless CVM Limit," no CVM is required—the customer can simply tap & go.¹⁰ Note that the Contactless CVM limit varies from country to country,

Cardholder verification is required for contactless card transactions above the CVM limit (e.g., by online PIN using the merchant PIN pad or signature). You are liable for contactless transactions above the CVM limit that have no cardholder verification.

the mobile ordering device further configured to accept input from a consumer

A new form of CVM called Consumer Device Cardholder Verification (CDCVM) is available with mobile contactless devices. In this case, the customer enters a PIN (or biometric) on the mobile device. Two versions are supported:

- **Early CDCVM.** The customer provides the cardholder verification before the tap (typically while waiting in the line or queue).
- **Two-Tap.** The customer taps their device onto the reader to start the transaction, moves their phone away for CDCVM when prompted, and taps again to complete the transaction.

CDCVM can also be supported through biometric technology, if the mobile device is fitted with a fingerprint reader for example. Other verification methods may be supported in the future like pattern and vein recognition.

<https://www.mastercard.us/content/dam/public/mastercardcom/na/us/en/documents/contactless-merchant-toolkit.pdf>

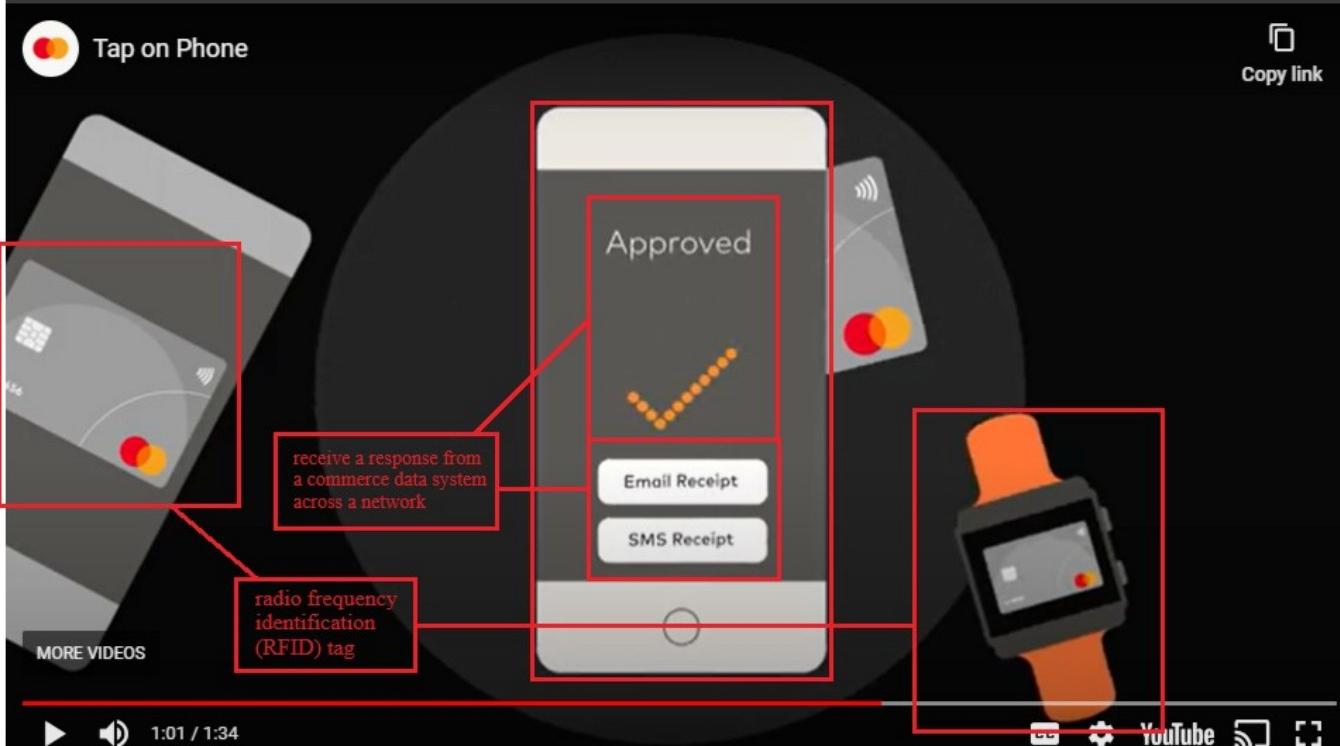
For contactless transactions below the CVM limit, a receipt is not required unless the consumer requests it. For transactions above the limit, a receipt must always be provided.

receive a response from a commerce data system across a network

<https://www.mastercard.us/content/dam/public/mastercardcom/na/us/en/documents/contactless-acquirer-toolkit.pdf>



<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/iphone.html>

	 <p>https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html</p>
the mobile ordering device in communication with the commerce data system, the commerce data	The accused product discloses the mobile ordering device (e.g., NFC-enabled device) in communication with the commerce data system (e.g., payments from any contactless card or mobile wallet), the commerce data system (e.g., payments from any contactless card or mobile wallet) for receiving and processing the request (e.g., payment request) of the mobile ordering device (e.g., NFC-enabled device) across the network, and responding to the request (e.g., payment request) by sending information (e.g., acknowledgement in the form of Done or a checkmark on the display screen) to the mobile ordering device (e.g., NFC-enabled device) via the network, the information associated with the wireless identification transmission signal

<p>system for receiving and processing the request of the mobile ordering device across the network, and responding to the request by sending information to the mobile ordering device via the network, the information associated with the wireless identification transmission signal.</p>	<p>(e.g., tag responds with the requested information corresponding to a prompt for inputting a PIN).</p> <p>As shown below, Mastercard Tap on Phone is a contactless payment system using Near Field Communication (NFC) technology wherein a user can Pay with your NFC-enabled contactless card to a phone equipped with tap on phone software to accept payments. The device completes the payment request by sending a request to the commerce data system by inputting an online pin from Merchant PIN Pad or signature. Once the payment is processed, the commerce data system responds to the request by sending an acknowledgement to the device.</p> <h2>How it works</h2> <p>Contactless checkout is ideal when speed and convenience are essential. <u>You can use it at stadiums, fast food restaurants, gas stations, grocery stores, transit locations and more.</u></p> <p>https://www.mastercard.us/en-us/personal/ways-to-pay/contactless.html</p>
---	---



Paperless receipt

Option to send receipt to
customers through SMS or email.

<https://www.mastercard.us/en-us/business/overview/start-accepting/mobile-pos/tap-on-phone.html>

CARDHOLDER VERIFICATION

Traditional payments normally require some Cardholder Verification Method (CVM) such as PIN or signature. For low-value contactless payments below the "Contactless CVM Limit," no CVM is required—the customer can simply tap & go." Note that the Contactless CVM limit varies from country to country,

Cardholder verification is required for contactless card transactions above the CVM limit (e.g., by online PIN using the merchant PIN pad or signature). You are liable for contactless transactions above the CVM limit that have no cardholder verification.

the mobile ordering device further configured to accept input from a consumer

A new form of CVM called Consumer Device Cardholder Verification (CDCVM) is available with mobile contactless devices. In this case, the customer enters a PIN (or biometric) on the mobile device. Two versions are supported:

- **Early CDCVM.** The customer provides the cardholder verification before the tap (typically while waiting in the line or queue).
- **Two-Tap.** The customer taps their device onto the reader to start the transaction, moves their phone away for CDCVM when prompted, and taps again to complete the transaction.

CDCVM can also be supported through biometric technology, if the mobile device is fitted with a fingerprint reader for example. Other verification methods may be supported in the future like pattern and vein recognition.

<https://www.mastercard.us/content/dam/public/mastercardcom/na/us/en/documents/contactless-merchant-toolkit.pdf>

For contactless transactions below the CVM limit, a receipt is not required unless the consumer requests it. For transactions above the limit, a receipt must always be provided.

receive a response from a commerce data system across a network

<https://www.mastercard.us/content/dam/public/mastercardcom/na/us/en/documents/>

